IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPELLANTS' BRIEF UNDER 37 C.F.R. § 41.37

In re the Application of:	**Conrad et al.**
Application No.:	**10/076,141**
Filed:	**February 15, 2002**
Group Art Unit:	**1744**
Examiner:	**Monzer Chorbaji**
For:	**FLUID CONTACT CHAMBER**
Attorney Docket No.:	**88630.213**

Attorney for Appellants:
Henry Wixon, Esq.
Wilmer Cutler Pickering Hale and Dorr LLP
1875 Pennsylvania Ave, NW
Washington, DC, 20006
Phone: (202) 663-6000

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I. REAL PARTY IN INTEREST

ATI Properties, Inc. is the Real Party in Interest pursuant to an Assignment executed by each of the inventors and recorded in the U.S. Patent and Trademark Office at Reel/Frame 015101/0188.

II. RELATED APPEALS AND INTERFERENCES

The Appellants, the Appellants' legal representatives and the Assignee are not aware of any pending appeals or interferences that would directly or indirectly affect or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

During the course of prosecution, claim 17 was cancelled. Claims 1-16 and 18-21 are currently pending in the application, and are being appealed herein.

IV. STATUS OF AMENDMENTS

The U.S. Patent and Trademark Office (USPTO) issued a final office action dated March 8, 2006, finally rejecting claims 1-21. Appellants filed a Notice of Appeal and an Amendment on September 07, 2006, amending claim 1 and canceling claim 17. On September 25, 2006, the USPTO entered the amendment, but issued an Advisory Action maintaining the rejection of claims 1-16 and 18-21.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Independent claim 1 provides a fluid contact chamber having a container for a first fluid and an inlet for introducing a second fluid. (Specification page 6, lines 5-6) (Figure 1, elements 10 and 26) The fluid contact chamber also has a means for directing the flow of the first fluid comprising at least one first baffle extending from one side of the container towards a second side of the container, and forming a first gap between said first baffle and the second side. (Specification page 6, lines 6-7)(Figure 1, 18a, 18b, and 18c.) The first baffle inclines upwardly from the first side towards the second side, at a first angle between 22.5° and 27.5°. (Specification page 9, lines 3-5). The container also has an outlet for passage of the first and second fluid (Specification page 6, lines 15-16) (Figure 1 element 26).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Rejection of claim 1 as anticipated under 35 U.S.C. § 102(a) by U.S. Patent No. 4,933,118 to Meston

B. Rejection of claim 1 as obvious under 35 U.S.C. § 103(a) in view of U.S. Patent No. 4,933,118 to Meston

C. Rejection of claim 1 as obvious under 35 U.S.C. § 103(a) in view of U.S. Patent No. 4,933,118 to Meston and U.S. Patent No. 4,029,578 to Turk

D. Rejection of claims 1-2, 4, 6, 12, 15-18, and 20-21 as obvious under 35 U.S.C. § 103(a) in view of U.S. Patent No. 4,029,578 to Turk.

E. Rejection of claim 5 as obvious under 35 U.S.C. § 103(a) in view of U.S. Patent No. 4,029,578 to Turk.

F. Rejection of claim 19 as obvious under 35 U.S.C. § 103(a) in view of U.S. Patent No. 4,029,578 to Turk.

G. Rejection of claim 3 as obvious under 35 U.S.C. § 103(a) in view of U.S. Patent No. 4,029,578 to Turk and U.S. Patent No. 5,091,118 to Burgher.

H. Rejection of claims 7 and 8 as obvious under 35 U.S.C. § 103(a) in view of U.S. Patent No. 4,029,578 to Turk and U.S. Patent No. 4,028,246 to Lund.

I. Rejection of claim 9 as obvious under 35 U.S.C. § 103(a) in view of U.S. Patent No. 4,029,578 to Turk, U.S. Patent No. 4,028,246 to Lund, and U.S. Patent 5,683,576 to Olsen.

J. Rejection of claims 10 and 11 as obvious under 35 U.S.C. § 103(a) in view of U.S. Patent No. 4,029,578 to Turk and U.S. Patent No. 5,753,106 to Schenk

K. Rejection of claims 13 and 14 as obvious under 35 U.S.C. § 103(a) in view of U.S. Patent No. 4,029,578 to Turk, U.S. Patent 5,091,1218 to Burgher, and U.S. Patent No. 4,028,246 to Lund.

VII. ARGUMENT

In view of the entry of Appellants' amendment to claim 1 to recite a baffle angle between 22.5° and 27.5°, the claimed invention is not anticipated by Meston or any other art of record. The Examiner's contention, that the claimed invention is obvious, relies on hindsight and the teachings of Appellants' own specification. The art of record teaches away from the limitations of Appellant's claimed apparatus, the result of which is that the Examiner must denigrate the teachings of the very art he cites in rejecting the claims. A proper rejection for obviousness

cannot rest upon such reasoning. There is no suggestion in the primary art of record (Meston) to modify the baffle angle to Appellants' claimed range; rather, that art teaches away from Appellants' baffle angles. Applying Appellant's claimed range to the prior art apparatus would not be obvious, as the Examiner suggests, but would destroy the utility of the prior Meston apparatus. The Examiner has failed to establish a prima facie case of obviousness, and accordingly his requirement that Appellants show criticality of the claimed baffle angle range is improper.

A. Rejection of claim 1 as anticipated under 35 U.S.C. § 102(a) by U.S. Patent No. 4,933,118 to Meston

Claim 1 is not anticipated in view of U.S. Patent No. 4,933,118 to Meston ("Meston"), because Meston fails to a teach, *inter alia*, a baffle angle of between 22.5° and 27.5°. Meston is directed to a mobile system for scrubbing a gas using a fluid. It teaches the use of a low baffle angle, one that is at most 15°. For example, it teaches that "[t]he angles of the baffles 12 and 13 are normally quite small, for example 3.1° for the lower baffle 12, and 4.2° for the upper inclined baffle 13 in the case of a mobile scrubbing apparatus" (Col. 5, lines 29-32). Meston further teaches that "[t]he range of 2-15° should cover most scrubbing applications" (Col. 5, lines 57-58). There is no teaching in Meston of a baffle angled between 22.5° and 27.5° as recited in claim 1, and the Examiner has not pointed to any such teaching. Meston does not anticipate claim 1.

B. Rejection of claim 1 as obvious under 35 U.S.C § 103(a) in view of U.S. Patent No. 4,933,118 to Meston

Claim 1 is not obvious in view of Meston, because there is no motivation to modify the baffles of Meston to an angle of 22.5° and 27.5° as recited in claim 1. Meston teaches a mobile gas scrubbing apparatus having low baffle angles, and specifically teaches away from higher baffle angles, such as those claimed by Appellant, because "the retention time of the gas in the apparatus will be too low." (Meston, col. 5, lines 42-45.) The Meston apparatus would not operate effectively for its intended purpose if modified to the higher baffle angles claimed by Appellants. The Examiner's suggestion to modify Meston to achieve Appellants' invention is contrary to both the teaching of the reference and the motivation expressly taught therein.

Meston is directed to a mobile system for scrubbing a gas using a fluid, and teaches the use of a low baffle angle, one that is *at most* 15° (col. 5, lines 57-58). ("The range of 2-15° should cover most scrubbing applications." Id.) Moreover, the baffle angles actually exemplified in Meston are at the bottom of this range: "The angles of the baffles 12 and 13 are normally quite small, for example 3.1° for the lower baffle 12, and 4.2° for the upper inclined baffle 13 in the case of a mobile scrubbing apparatus" (col. 5, lines 29-32). Fairly read, the teachings of Meston would have suggested to one of ordinary skill in the art that baffle angles must be kept low to achieve adequate gas retention time, and that higher baffle angles would defeat this objective.

In addition to Meston's teaching of low baffle angles to ensure adequate gas retention time, Meston teaches the person of ordinary skill away from higher angle baffles because high angles would increase the height of Meston's apparatus, making it impractical for its intended mobile use. See Meston at col. 5, lines 50-54. The gas scrubbing apparatus taught by Meston is intended to be small so that is can be used for mobile applications:

> A need exists for a small gas treatment apparatus of the type which can be mounted on a tank truck or other vehicle for treating cases emanating from liquid carried by the vehicle. Such an apparatus should, inter alia, have relatively small dimensions, be resistant to vibration, i.e. capable of operating while in motion, and be easy to empty and fill with scrubbing liquid. The object of the present invention is to meet the above need by providing a relatively simple gas scrubbing apparatus, which can readily be produced with small dimensions.
>
> (Meston, col. 1, lines 16-26.)

Increasing the angle of Meston's baffles as suggested by the Examiner would increase the height of the apparatus, making it less suitable for its intended use in a mobile application. See Meston at col. 5, lines 50-54. MPEP 2145(X)(D).

The Examiner has engaged in hindsight reasoning, using the claimed invention as a roadmap. This is evident from the Examiner's argument that "one of ordinary skill in the art wanting to design a non-portable mixing device would realize based upon Meston guidance that the number of baffles as well as their angle range are to be modified for an apparatus intended to

be not loaded on trucks." The Examiner cites to no support in the art of record for the contention that one of ordinary skill in the art would want to design a non-portable mixing device. Not only does Meston fail to provide any motivation to design such a device, it criticizes non-portable systems as "bulky, permanent structures" and "not suitable for small scale operations." (Col. 1, lines 10-16). Additionally, it is contrary to common sense to take the small and portable apparatus taught by Meston and make it bigger and non-portable, unless there is some advantage in doing so. The only motivation of record to make such a change is provided by Appellants' specification.

The Examiner's argument that "absent any evidence of criticality to upwardly inclination angles, determining the proper range of the upwardly inclined angles is a matter of routine experimentation," and therefore that invention must be obvious, is not a correct statement. Appellants need not show criticality where, as here, the art of record teaches completely away from the limitations of the claimed invention.

No motivation has been offered by the Examiner on this record for one of ordinary skill in the art to use higher angles. Meston teaches a baffle angle of at most 15° (and exemplifies single digit baffle angles), Turk teaches a baffle angle of 0° (horizontal baffles), and none of the other cited references even teaches angled baffles. One of ordinary skill would be motivated by the teachings of the art of record to look at lower angles, e.g., angles between 0° and 15°.

Even if a motivation were present to experiment with higher angles, criticality is only needed to rebut a prima facie case of obviousness if there is an overlap between the claimed range and a prior art teaching (MPEP 2144.04(III)), which is not the case here, or if the prior art range is close enough to the claimed range "such that one skilled in the art would have expected them to have the same properties." See In re Peterson, 315 F.3d 1325, 1329 (Fed. Cir. 2003). Here, the person of ordinary skill, taught by Meston the goal of adequate gas retention achieved at low baffle angles, would not reasonably have had the expectation that baffle angles as claimed by Appellants would have the same properties. The Examiner's suggestion that the baffle angle "depends on the velocities of the fluid to be contacted and the rate of the flow of fluid to be introduced" (Advisory Action, page 3), does not come from the art of record, but rather is derived from Appellants' specification. More importantly, the Examiner's suggestion

underscores the point that the person of ordinary skill would not have expected Appellants' claimed baffle angles to have the same properties as the angles of the art of record. The solution to the Examiner's suggestion comes, improperly, from Appellants' specification.

It would not have been obvious to modify the apparatus of Meston by increasing the angles of the baffles to those claimed by Appellants.

C. Rejection of claim 1 as obvious under 35 U.S.C. § 103(a) in view of U.S. Patent No. 4,933,118 to Meston and U.S. Patent No. 4,029,578 to Turk.

Claim 1 is not obvious in view of Meston and U.S. Patent No. 4,029,578 to Turk ("Turk"), because Turk does not teach a baffle angle between 22.5° and 27.5°, nor does Turk provide a motivation to increase the angle of a baffle to the claimed range.

Turk does not teach or suggest the inclination of a baffle to any angle. The Examiner states that "[t]he Turk reference discloses multiple horizontal baffles" (March 8, 2006 Office Action, page 4). Additionally, Figure 1 of Turk shows horizontal baffles 12, and the specification does not disclose any inclination for the baffles. (Col. 3, lines 51-54).

Therefore, not only does Turk fail to provide a motivation to modify the baffle of Meston to a higher angle, it teaches away by showing that horizontal baffles are sufficient. One of ordinary skill in the art, based on a fair reading of the teachings of Meston and Turk, would be motivated to use a baffle with no angle or with a low single digit angle (in degrees from horizontal) and in any event less than or equal to 15°.

D. Rejection of claims 1-2, 4-6, 12, and 15-21 as obvious under 35 U.S.C. § 103(a) in view of U.S. Patent No. 4,029,578 to Turk.

Claim 1 is not obvious in view of Turk. As described above, the combination of Turk and Meston do not render claim 1 obvious, and Turk alone, which teaches horizontal (0°) baffles, would require even more modification than Meston to arrive at the claimed invention. As described above, Turk does not provide a motivation to modify its horizontal baffles to an angle between 22.5° and 27.5° as recited in claim 1.

The Examiner argues that "one of ordinary skill in the art would recognize that inclining the baffles to an angle between 10 and 45 degrees would result in improving the mixing rate

between the contaminated water and the ozone gas." (Final Office Action, page 4). However, the Examiner has not pointed to any teaching or suggestion in the art of record for the ordinarily skilled artisan's recognition of the Examiner's point. As described above, the primary references teach away from the baffle angles of Appellants' claimed invention, and do not support the Examiner's argument.

E. Rejection of claim 5 as obvious under 35 U.S.C. § 103(a) in view of U.S. Patent No. 4,029,578 to Turk.

Regarding claim 5, the Examiner admits that "[t]he Turk reference discloses multiple horizontal baffles extending from both sides of the contact chamber, but fails to teach inclining the baffles upwardly such [sic] a tilting results in modifying the surface of the baffle from horizontal position to upwardly inclined position" (Final Office Action, page 4).

Tilting of a baffle is not a modification of the surface of a baffle as recited in Claim 5. The specification describes one such modification as "roughening to promote precipitation of reaction products." (Specification page 4, lines 11-15). Although tilting a baffle inherently tilts the surface of a baffle, tilting does not modify the surface of the baffle.

F. Rejection of claim 19 as obvious under 35 U.S.C. § 103(a) in view of U.S. Patent No. 4,029,578 to Turk.

Claim 19 recites "wherein said second angle is between 22.5° and 27.5°." As described above, Turk teaches no (0°) baffle angle, and neither shows nor suggests any motivation to modify one baffle to a higher angle, much less to modify a second baffle to a higher angle.

G. Rejection of claim 3 as obvious under 35 U.S.C. § 103(a) in view of U.S. Patent No. 4,029,578 to Turk and U.S. Patent No. 5,091,118 issued to Burgher.

U.S. Patent No. 5,091,118 to Burgher ("Burgher") fails to supply the deficiencies of the primary Turk reference with respect to claim 3, which depends from claim 1, and claim 3 is allowable for at least the reasons given above with respect to claim 1.

One of ordinary skill in the art would not have been motivated to combine Turk with Burgher in the manner suggested by the Examiner. The Examiner states that Burgher is directed to the problem of "sparging gases into liquids" (Office Action page 5), and from this concludes

that it would have been obvious "to modify the device of the Turk reference by adding venturi means as taught by the Burgher reference in order to maximize the concentration of the gas in the liquid." However, there is no suggestion that this was a problem or a goal of Turk. The Examiner is again using hindsight. The only suggestion to use a venturi with a fluid contact chamber comes from Appellants' specification, which teaches that "the first and second fluids mix in the tubes." (Specification page 8, lines 3-4).

H. Rejection of claims 7 and 8 as obvious under 35 U.S.C. § 103(a) in view of U.S. Patent No. 4,029,578 to Turk and U.S. Patent No. 4,028,246 issued to Lund.

U.S. Patent No. 4,028,246 to Lund et al. ("Lund") fails to supply the deficiencies of Turk with respect to claims 7 or 8, which depend from claim 1, and they are allowable for at least the reasons given above with respect to claim 1.

One of ordinary skill in the art would not have been motivated to combine these references in the manner urged by the Examiner. The Examiner argues at page 6 of the Final Office Action that the combination of Turk with Lund yields a "synergistic" effect: "it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of the Turk reference by adding ultrasonic and ultraviolet emitters as taught by the Lund reference since the combination of such emitters result in a synergistic effect for better fluid treatment." Fairly read, the Examiner's cited support to Lund for this statement (Lund, col. 2, lines 5-7), contains no reference to the particular effect claimed by Appellants, but rather is merely precatory: "The system may also be provided with additional treatment to gain a synergistic effect of the combined treatments." The art of record does not support the Examiner's rejection of claims 7 and 8 over the combination of Turk and Lund.

I. Rejection of claim 9 as obvious under 35 U.S.C. § 103(a) in view of U.S. Patent No. 4,029,578 to Turk, U.S. Patent No. 4,028,246 issued to Lund, and U.S. Patent 5,683,576 to Olsen.

U.S. Patent No. 5,683,576 to Olsen ("Olsen") fails to supply the deficiencies of Turk and Lund with respect to claim 9, which depends from claim 1, and claim 9 is allowable for at least the reasons given above with respect to claim 1.

One of ordinary skill in the art would not have been motivated to combine these three references in the manner urged by the Examiner. As noted above, there is no motivation to combine the Turk and Lund references, let alone the Turk, Lund, and Olsen references. The Examiner argues at page 7 of the Final Office Action that Lund is combined with Turk as in claim 8, and that one of ordinary skill in art would then be motivated to combine Olsen and "modify the Turk reference by placing ultrasonic emitter within the chamber as taught by the Olsen reference since the sonic waves disburse fine bubbles into microbubbles causing a greater mass transfer that result in increasing efficiency of water treatment."

However, a fair reading of Olsen reveals that it does not teach or suggest the use of a sonic wave generator directed through eddies, as recited in claim 9, because there are no such eddies taught in the system of Olsen. The system of Olsen contains a CT chamber that uses an air diffuser and a sonic wave generator in conjunction with an ozone generator. Because there are no inclined baffles in the system of Olsen, there are also no eddies being created. Although Turk discloses horizontal baffles, it has no discussion of eddy formation. Therefore one of ordinary skill in the art would not have been motivated to combine the teachings of Turk, Lund and Olsen, to emit an ultrasonic signal "through the eddy," as recited in claim 9. Rather, the motivation derives from the teachings of Appellants' own specification.

J. Rejection of claims 10 and 11 as obvious under 35 U.S.C. § 103(a) in view of U.S. Patent No. 4,029,578 to Turk and U.S. Patent No. 5,753,106 issued to Schenk

The Examiner urges the combination of U.S. Patent No. 5,753,106 to Schenk with the primary reference Turk; however, Schenk fails to supply the deficiencies of Turk with respect to claims 10 and 11, which depend indirectly from claim 1, and which are allowable for at least the reasons given above with respect to claim 1.

The Examiner argues that it would have been "obvious to one having ordinary skill in the art at the time the invention was made to modify the device of the Turk reference by including titanium dioxide as taught by the Schenck reference in order to improve the photopurification process by counterbalancing the effects of the contaminants absorption that result in restricting photochemical reactions." However, the combination of Schenk with Turk does no more to inform the ordinarily skilled artisan regarding the baffle angles of Appellants' claimed invention,

as claimed in claims 10 and 11, than does Turk alone (and it is noted that Turk also discloses catalysts).

K. Rejection of claims 13 and 14 as obvious under 35 U.S.C. § 103(a) in view of U.S. Patent No. 4,029,578 to Turk, U.S. Patent 5,091,1218 to Burgher and U.S. Patent No. 4,028,246 issued to Lund.

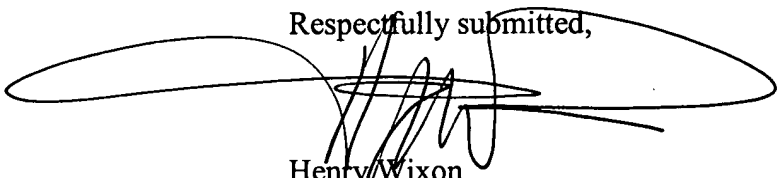
Claims 13 and 14 depend indirectly from claim 1, and because Burgher fails to supply the deficiencies of Turk, alone or in combination with Lund, claims 13 and 14 are allowable for at least the reasons set forth above with respect to claim 1.

The Examiner concedes that neither Turk nor Burgher teaches "a removable insert from the container;" however he urges that Lund "teaches the use of removable baffles (20)." A fair reading of Lund, however, reveals that Lund does not teach a baffle. Lund describes element 20 as the "top portion" (Col 3, lines 15-18) of a "panel 16." Lund describes the operation of its apparatus in this aspect as follows: "The liquid will then flow in thin uniform, layers over the large surface area created by a plurality of panels which are corrugated to provide an overall larger surface area. The liquid is allowed to run down both sides of each panel thereby substantially increasing the overall surface area and exposure time that the liquid is in contact with the ozone" (emphasis added) (Lund, col. 3, lines 7-14). These panels are taught to be "corrugated panels 16 extending vertically in the chamber 15 dividing the chamber 15 into a plurality of units" (Lund, col. 2, lines 60-63). Lund does not teach or suggest Appellants' baffles as claimed.

L. CONCLUSION

For the reasons set forth above, Appellants respectfully request that the Board of Patent Appeals and Interferences reverse the outstanding rejections under 35 U.S.C § 102 and 103, and remand the application to the Examiner to enter a Notice of Allowance for claims 1-16 and 18-21, all pending claims of the application.

Respectfully submitted,



Henry Wixon
Registration No. 32, 073

Date: 2 APRIL 2007

Wilmer Cutler Pickering Hale and Dorr LLP
1875 Pennsylvania Ave, NW
Washington, DC, 20006
Phone: (202) 663 6000

VIII. CLAIMS APPENDIX

1. A fluid contact chamber comprising:

a container for a first fluid having first and second sides separated by a space there between;

at least one inlet for introducing a flow of a second fluid; and

a means for directing the flow of said first fluid such that at least one eddy is formed, said means for directing comprising:

at least one first baffle extending from said first side toward said second side, forming a first gap between said first baffle and said second side, said first baffle inclining upwardly from said first side toward said second side, at a first angle between 22.5° and 27.5°; and

an outlet for passage of the first and second fluid.

2. The chamber of claim 1 further comprising:

at least one second baffle extending from said second side toward said first side, forming a second gap between said second baffle and said first side, and inclining upwardly at a second angle.

3. The chamber of claim 1 further comprising:

a venturi tube for introducing the first fluid and the second fluid mounted at the at least one inlet.

4. The chamber of claim 1 wherein a catalyst is disposed in the container.

5. The chamber of claim 1 wherein at least a portion of a surface of the first baffle is modified to promote precipitation.

6. The chamber of claim 2 further comprising a means for chemical modification.

7. The chamber of claim 6 wherein the means for chemical modification comprises an ultrasonic emitter.

8. The chamber of claim 6 wherein the means for chemical modification comprises a source of ultraviolet energy.

9. The chamber of claim 8 wherein each of an adjacent pair of said at least one first and second baffles of the means for directing the flow is disposed at an angle relative to the ultrasonic emitter such that an emitted ultrasonic signal is directed through the eddy.

10. The chamber of claim 4 wherein said catalyst is titanium dioxide.

11. The chamber of claim 10 wherein the inlet is at a lower portion of the container.

12. The chamber of claim 2 wherein at least one of said at least one first and second baffles extends across 80% of the width of the chamber.

13. The chamber of claim 3 wherein said means for directing further comprises an insert removable from the container and supporting at least one of said at least one first and second baffles.

14. The chamber of claim 13 wherein the insert is constructed and arranged to fit within the container and to be distanced therefrom to provide for a fluid flow between the container and the insert.

15. The chamber of claim 1 comprising an inlet and an outlet for each of the first fluid and the second fluid, the first fluid being introduced to the chamber to flow counter to the flow of the second fluid.

16. The chamber of claim 1 wherein said directing means defines a serpentine flow path through said chamber.

17. (Canceled)

18. The chamber of claim 1 wherein said first angle is substantially equal to 22.5°.

19. The chamber of claim 2 wherein said second angle is between 22.5° and 27.5°.

20. The chamber of claim 2 wherein said second angle is substantially equal to 22.5°.

21. The chamber of claim 2 wherein an adjacent pair of said at least one first baffle and said at least one second baffle forms a third gap defining a truncated triangular cross-section.

IX. EVIDENCE APPENDIX

No additional evidence is being provided to supplement the current record.

X. RELATED PROCEEDINGS APPENDIX

No court decisions or Board proceedings were identified in Section (II) of this brief pursuant to § 41.37(c)(1)(ii).